

<b>Exploring Aeronautics</b>			
<b>2006 21st Century Science</b>			
<b>Standards and Objectives</b>			
<b>West Virginia 21st Century Science</b>			
<b>Grade 5</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Fundamentals of Aeronautics (145-176)	WV	SCI.5.SC.O.5.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Fundamentals of Aeronautics (145-176)	WV	SCI.5.SC.O.5.1.08	use a variety of technologies and scientific instruments to conduct explorations, investigations and experiments of the natural world.
Fundamentals of Aeronautics (145-176)	WV	SCI.5.SC.O.5.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Fundamentals of Aeronautics (145-176)	WV	SCI.5.SC.O.5.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Wings(177-208)	WV	SCI.5.SC.O.5.2.15	investigate the properties of an electromagnet by selecting appropriate materials, designing and testing an electromagnet, and evaluating differences in design.
Airplane Control(209-256)	WV	SCI.5.SC.O.5.2.15	investigate the properties of an electromagnet by selecting appropriate materials, designing and testing an electromagnet, and evaluating differences in design.
The Resource Center	WV	SCI.5.SC.O.5.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
The Resource Center	WV	SCI.5.SC.O.5.1.04	compare and contrast the historical significance of scientific discoveries.
Science of Flight	WV	SCI.5.SC.O.5.1.04	compare and contrast the historical significance of scientific discoveries.
Science of Flight	WV	SCI.5.SC.O.5.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
Intro to Aeronautics (109-123)	WV	SCI.5.SC.O.5.1.08	use a variety of technologies and scientific instruments to conduct explorations, investigations and experiments of the natural world.
Intro to Aeronautics (109-123)	WV	SCI.5.SC.O.5.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Intro to Aeronautics (109-123)	WV	SCI.5.SC.O.5.1.12	use inferential reasoning to make logical conclusions from collected data.
Scientific Method(124-144)	WV	SCI.5.SC.O.5.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.

Scientific Method(124-144)	WV	SCI.5.SC.O.5.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Scientific Method(124-144)	WV	SCI.5.SC.O.5.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
<b>Exploring Aeronautics</b>			
<b>2006 21st Century Science</b>			
<b>Standards and Objectives</b>			
<b>West Virginia 21st Century Science</b>			
<b>Grade 6</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Fundamentals of Aeronautics (145-176)	WV	SCI.6.SC.O.6.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Fundamentals of Aeronautics (145-176)	WV	SCI.6.SC.O.6.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Tools of Aeronautics(257-326)	WV	SCI.6.SC.O.6.1.08	use a variety of technologies and scientific instruments to conduct explorations, investigations and experiments of the natural world.
How an Airplane Flies	WV	SCI.6.SC.O.6.2.20	correlate the relationship of mass to gravitational force (e.g., larger the mass the larger the gravitational force, or the closer the objects the stronger the force).
The Tools of Aeronautics	WV	SCI.6.SC.O.6.3.04	compare and contrast the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, or flight characteristics of different-sized model airplanes).
The Activity Center	WV	SCI.6.SC.O.6.2.21	examine simple machines and the forces involved.
The Activity Center	WV	SCI.6.SC.O.6.2.22	apply the effects of balanced and unbalanced forces on motion of objects.
The Resource Center	WV	SCI.6.SC.O.6.1.04	compare and contrast the historical significance of scientific discoveries.
The Resource Center	WV	SCI.6.SC.O.6.3.04	compare and contrast the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, or flight characteristics of different-sized model airplanes).
Science of Flight	WV	SCI.6.SC.O.6.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Science of Flight	WV	SCI.6.SC.O.6.1.04	compare and contrast the historical significance of scientific discoveries.

Scientific Method(124-144)	WV	SCI.6.SC.O.6.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Scientific Method(124-144)	WV	SCI.6.SC.O.6.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Scientific Method(124-144)	WV	SCI.6.SC.O.6.1.12	use inferential reasoning to make logical conclusions from collected data.
<b>Exploring Aeronautics</b>			
<b>2006 21st Century Science</b>			
<b>Standards and Objectives</b>			
<b>West Virginia 21st Century Science</b>			
<b>Grade 7</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Fundamentals of Aeronautics (145-176)	WV	SCI.7.SC.O.7.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Fundamentals of Aeronautics (145-176)	WV	SCI.7.SC.O.7.1.08	use a variety of technologies and scientific instruments to conduct explorations, investigations and experiments of the natural world.
Fundamentals of Aeronautics (145-176)	WV	SCI.7.SC.O.7.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Fundamentals of Aeronautics (145-176)	WV	SCI.7.SC.O.7.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Fundamentals of Aeronautics (145-176)	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
Tools of Aeronautics(257-326)	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.
Tools of Aeronautics(257-326)	WV	SCI.7.SC.O.7.3.04	compare and contrast the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, or flight characteristics of different-sized model airplanes).
How an Airplane Flies	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.

How an Airplane Flies	WV	SCI.7.SC.O.7.3.04	compare and contrast the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, or flight characteristics of different-sized model airplanes).
Intro to Aeronautics (109-123)	WV	SCI.7.SC.O.7.1.04	compare and contrast the historical significance of scientific discoveries.
Intro to Aeronautics (109-123)	WV	SCI.7.SC.O.7.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
Intro to Aeronautics (109-123)	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
Intro to Aeronautics (109-123)	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.
Scientific Method(124-144)	WV	SCI.7.SC.O.7.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Scientific Method(124-144)	WV	SCI.7.SC.O.7.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Scientific Method(124-144)	WV	SCI.7.SC.O.7.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Scientific Method(124-144)	WV	SCI.7.SC.O.7.1.12	use inferential reasoning to make logical conclusions from collected data.
Scientific Method(124-144)	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
Scientific Method(124-144)	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.
<b>Exploring Aeronautics</b>			
<b>2006 21st Century Science</b>			
<b>Standards and Objectives</b>			
<b>West Virginia 21st Century Science</b>			
<b>Grade 8</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.1.01	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.1.04	conduct and/or design investigations that incorporate the skills and attitudes and/or values of scientific inquiry (e.g., established research protocol, accurate record keeping, replication of results and peer review, objectivity, openness, skepticism, fairness, or creativity and logic).

Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.1.07	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).
Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.1.08	draw conclusions from a variety of data sources to analyze and interpret systems and models (e.g., use graphs and equations to measure and apply variables such as rate and scale, evaluate changes in trends and cycles, predict the influence of external variances such as potential sources of error, or interpret maps).
Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.2.22	quantitatively represent work, power, pressure (e.g., $\text{Work} = \text{Force} \times \text{distance}$ , $\text{Power} = \text{Work}/\text{time}$ , or $\text{pressure} = \text{force}/\text{area}$ ) from collected data.
Fundamentals of Aeronautics (145-176)	WV	SCI.8.SC.O.8.2.24	describe Newton's Laws of Motion; identify examples, illustrate qualitatively and quantitatively drawing vector examples.
Wings(177-208)	WV	SCI.8.SC.O.8.2.24	describe Newton's Laws of Motion; identify examples, illustrate qualitatively and quantitatively drawing vector examples.
Airplane Control(209-256)	WV	SCI.8.SC.O.8.2.24	describe Newton's Laws of Motion; identify examples, illustrate qualitatively and quantitatively drawing vector examples.
Science of Flight	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
Science of Flight	WV	SCI.8.SC.O.8.1.07	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).

Science of Flight	WV	SCI.8.SC.O.8.1.08	draw conclusions from a variety of data sources to analyze and interpret systems and models (e.g., use graphs and equations to measure and apply variables such as rate and scale, evaluate changes in trends and cycles, predict the influence of external variances such as potential sources of error, or interpret maps).
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.1.01	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.1.04	conduct and/or design investigations that incorporate the skills and attitudes and/or values of scientific inquiry (e.g., established research protocol, accurate record keeping, replication of results and peer review, objectivity, openness, skepticism, fairness, or creativity and logic).
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.1.07	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.1.08	draw conclusions from a variety of data sources to analyze and interpret systems and models (e.g., use graphs and equations to measure and apply variables such as rate and scale, evaluate changes in trends and cycles, predict the influence of external variances such as potential sources of error, or interpret maps).
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.2.22	quantitatively represent work, power, pressure (e.g., $\text{Work} = \text{Force} \times \text{distance}$ , $\text{Power} = \text{Work}/\text{time}$ , or $\text{pressure} = \text{force}/\text{area}$ ) from collected data.
Intro to Aeronautics (109-123)	WV	SCI.8.SC.O.8.2.24	describe Newton's Laws of Motion; identify examples, illustrate qualitatively and quantitatively drawing vector examples.
Scientific Method(124-144)	WV	SCI.8.SC.O.8.1.01	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.

Scientific Method(124-144)	WV	SCI.8.SC.O.8.1.02	demonstrate how a testable methodology is employed to seek solutions for personal and societal issues. (e.g., “scientific method”).
Scientific Method(124-144)	WV	SCI.8.SC.O.8.1.04	conduct and/or design investigations that incorporate the skills and attitudes and/or values of scientific inquiry (e.g., established research protocol, accurate record keeping, replication of results and peer review, objectivity, openness, skepticism, fairness, or creativity and logic).
Scientific Method(124-144)	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
Scientific Method(124-144)	WV	SCI.8.SC.O.8.1.07	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).
Scientific Method(124-144)	WV	SCI.8.SC.O.8.2.26	research and draw conclusions related to the quality and quantity of surface and ground water.
Scientific Method(124-144)	WV	SCI.8.SC.O.8.3.03	communicate experimental designs, results and conclusions using advanced technology tools.